

### **REMARKS**

Claims 2, 3, 5, 6, 13-19, and 22-41 are pending. Claims 33-35 were added in the Response dated 22 December 2005, but were not acknowledged in the Office Action Summary.

Claims 36-42 are new and depend directly or indirectly from claim 5. See, e.g., pages 28-29 and 108-110 for support. Table 2 on page 95 provides the SEQ ID numbers in claims 36-38 for the zinc finger domains in the Neuro1p protein described at page 108 and in FIG. 14.

### **Sequence Compliance**

The specification has been amended to remove the consensus for a homeodomain on page 54. Accordingly, no modification of the sequence listing is required.

### **Double Patenting**

The Applicants do not accede to the obviousness-type double patenting rejection in view of U.S.S.N. 10/538,041. The Applicants are unaware of this application and thus cannot determine whether there is a common inventor or owner between that application and this one. In any event, the rejection may be moot in view of the cancellation of claim 1. If the rejection is maintained, a copy of this application including filing particulars is requested.

### **Rejection under § 101**

Claims 14, 30, and 31 have been amended to refer to a recombinant cell. Accordingly, the claims do not read on human beings.

Support for "recombinant cells" can be found, e.g., at the final paragraph on page 89.

### **Rejections under § 112, ¶ 2 – Definiteness**

With respect to claim 5, the Examiner alleged on page 8 that:

Claim 5 is vague and indefinite in that the metes and bounds of the phrase "the DNA contacting residues of the first, second, and third domains at positions -1, 2, 3, and 6 of each domain respectively correspond to the motifs: QSNR, QSNK, and CSNR" are unclear. The

nature of the correspondence is unclear. The correspondence can be interpreted as a direct correspondence, where the motifs are QSNR, QSNK, and CSNR, respectively. Alternatively, the correspondence could be indirect, where the motif has substitutions within the motifs QSNR, QSNK, and CSNR.

Claim 5 has been amended to clarify the issue raised by the Examiner. A description of consensus motifs can be found, e.g., at page 52.

With respect to claim 6, the Examiner alleged on page 8:

Claim 6 is vague and indefinite in that the metes and bounds of the phrase "zinc finger array in SEQ ID NO: 2" are unclear. The phrase is unclear in that the term "zinc finger array" is not defined in the present specification, and there is no clear art-recognized definition. Thus, one would not be apprised of the scope of the invention.

The zinc finger array refers to the three zinc finger domains in SEQ ID NO:2 and is located at amino acids 31 to 109 of SEQ ID NO:2, as shown in FIG. 14 by the following sequence:

***FECKDCGKAIFIQKSNLIRHQRTHTGEKP YKCEECGKAFTQSSNLTKHK  
KIHTGEKP YKCKQCGKAFGCPSNLRRHGRTH.***

With respect to claim 22:

Claim 22 recites the limitation "zinc finger domains" in line 2. There is insufficient antecedent basis for this limitation in the claim. Claim 22 depends from claim 2, which depends from claim 1.

The antecedent basis problem has been cured since claim 22 now depends from claim 5 which refers to a first, second, and third zinc finger domain.

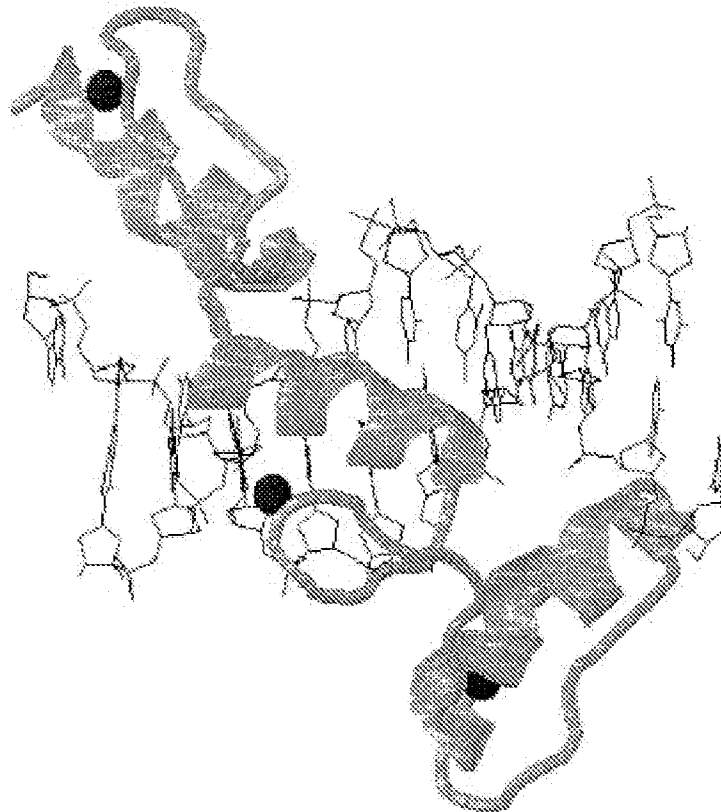
### **Rejections under § 112, ¶ 1 – Written Description**

The claims were rejected for lack of written description. The claims have been amended. For example, claim 5 has been amended and now recites with precision the identity of the DNA contacting residues in the first, second, and third zinc finger domains.

The Office's Written Description Guidelines, 66 Fed. Reg. 11099, 1106 (January 5, 2001) provides a general framework for this analysis:

An applicant may also show that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics which provide evidence that applicant was in possession of the claimed invention, i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics.

Here in particular, it is beyond dispute that zinc finger domains function by specifically recognizing specific sites on DNA and binding to them. Moreover, the three-dimensional structure of zinc finger domains is well understood. See, e.g., FIG. 1 of WO 01/60970 ("the '970 PCT") reproduced below:



The '970 PCT is mentioned in the specification, e.g., on page 1, and demonstrates that structural information is available. Moreover, the '970 PCT and this application identify the

residues within the zinc finger domains that function as the DNA contacting residues. The '970 PCT discloses at pages 44-45 (Example 8) that an unbiased screening technique reliably identifies amino acid residues for DNA recognition that are predicted by a recognition code. Thus, a close correspondence between structure and function has been established, and the identification of the structure of the DNA contacting residues suffices to describe a genus of molecules that have the same DNA binding properties.

Claim 5, as currently amended, recites a particular relationship between structure and function, namely the amino acids that enable a DNA recognition property that affects cell differentiation. In view of this disclosed relationship, the claims cannot be rejected for an inadequate structure-function correlation.

The Action on page 11 argues that:

No evidence is provided to demonstrate that these sequence variants are capable of inducing neurite formation.

Written description law does not require multiple working examples or the type of evidence suggested above by the Examiner. As stated in the Guidelines, it is sufficient that a structure (particular DNA contacting amino acid residues) and function (DNA recognition) has been identified. It is now well understood that the DNA contacting residues of zinc finger proteins provide specificity and that other positions may be varied by those of ordinary skill to arrive at other zinc finger proteins that have the same DNA recognition properties and consequently the same phenotypic properties. Thus, claim 5 and claims dependent therefrom are adequately described by the specification.

The Applicants have enclosed the Board's decision in *Ex parte Sun*, Appeal No. 2003-1993 (January 20, 2004) (Exhibit A). Because this decision not formally published, it may not be cited in many proceedings and the Examiner ought not rely upon it. The decision nonetheless echoes the general principle, already manifest in the Office's Guidelines, that known information about a protein domain (here, the known location of DNA contacting residues and their identity) supports claims beyond an individual sequence.

The Applicants respectfully submit that, in view of the current amendments to the claims, the specification provides an adequate written description. In the event that the Examiner maintains the rejection, the Applicants ask that the Examiner identify the evidence relied upon to rebut the well known correspondence between DNA recognition specificity and zinc finger protein structure and evidence that those of ordinary skill would require more to reach the conclusion that the inventors were in possession of the breadth of species encompassed by the current claims. Moreover, the Applicants ask that the Examiner separately identify the written description defect (if any) in the dependent claims, as many of these recite additional structural features.

#### **Rejections under § 102 – Anticipation**

Claims 1-3 are cancelled without prejudice. Claims 14, 24, 25, and 30 no longer depend from these claims. Accordingly the rejection is moot.

#### **Conclusion**

The Applicants respectfully submit that all claims are in condition for allowance, which action is expeditiously requested. The Applicants do not concede any positions of the Examiner that are not expressly addressed above, nor do the Applicants concede that there are not other good reasons for patentability of the presented claims or other claims. All amendments and withdrawals are made without prejudice and disclaimer.

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Respectfully submitted,

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